

VERSION WITH MARKINGS TO SHOW CHANGES MADE:

IN THE CLAIMS:

Claims 2 and 8 have been canceled.

Claims 3-7, 9-15 have been amended as follows:

3. (Amended) ~~The~~ A linear synchronous motor comprising as claimed in claim

2:

a) at least one primary part (1) and at least one secondary part (6);

b) the secondary part (6) has a sequence of poles (10) formed by permanent magnets;

c) the length of the secondary part (6) is greater than the length of the primary part (1) in the movement direction (5);

d) the primary part (1) has primary part slots (9) which are suitable for holding monophasic or polyphase windings.

e) the primary part (1) has means which lead to a change in the magnetic force in the movement direction (5) of the linear motor in the region of the end pieces (2) of the primary part (1), and

f) the end faces (14) of the end pieces (2) extend perpendicular to the movement direction (5) of the linear motor,

wherein the air gap between the end pieces (2) and the secondary part (6) changes gradually within a single pole pitch so as to realize a continuous increase or decrease in the magnetic force in the movement direction (5) of the linear motor in the region of the end pieces (2) of the primary part (1),

characterized in that wherein the geometry of the parts, facing the air gap, of the end pieces (2) is selected in accordance with the following relationship:

$$y(x) = \delta_0 \left[\frac{1}{\sqrt{1 - \frac{x}{x_0}} \left[1 - \left(\frac{1}{1 + \frac{y_0}{\delta_0}} \right) \right]} - 1 \right]$$

wherein

δ_0 is the magnetically active air gap between the secondary part and the primary part, including the height of the permanent magnets,

x_0 is the extent of the part of the end piece in the direction of movement of the linear motor having a non-constant air gap,

y_0 is a height of the part of the end piece having a non-constant air gap at x_0 and,

$y(x)$ is the coordinate of the part of the end piece having a non-constant air gap at the point x .

4. (3X Amended) The linear synchronous motor as claimed in claim 2 3, characterized in that the gaps (13), located between the poles (10), of the secondary part (6) exhibit an angle (20) which differs from 90° with respect to the movement direction (5) of the linear motor.

5. (3X Amended) The linear synchronous motor as claimed in claim 2 3, characterized in that the gaps (13) located between the poles (10) have a varying gap width (P).
6. (3X Amended) The linear synchronous motor as claimed in claim 4 3, characterized in that the end pieces (2) include at least one partial stack of laminations made of ferromagnetic material, said laminations directed essentially perpendicular to the direction of movement (5) of the linear motor.
7. (3X Amended) The linear synchronous motor as claimed in claim 2 3, characterized in that the end pieces (2) are configured for attachment onto the primary part (1).
9. (Amended) ~~The A~~ linear synchronous motor ~~of claim 8~~ comprising:
at least one primary part defined by a length and having slots for receiving monophase or polyphase windings, said primary part having end pieces extending perpendicular to a direction of movement of the linear motor;
at least one secondary part having a series of poles formed by permanent magnets, said secondary part defined by a length which is greater than the length of the primary part in a direction of movement of the linear motor; and

means, associated to the primary part, for changing the magnetic force in the direction of movement of the linear motor in the region of the end pieces of the primary part,

wherein an air gap between the end pieces and the secondary part changes gradually within a single pole pitch so as to realize a continuous increase or decrease in the magnetic force in the movement direction of the linear motor in the region of the end pieces of the primary part,

wherein each said end piece has a part adjacent the air gap, said part of the end piece having a geometry selected in accordance with the following relationship:

$$y(x) = \delta_0 \left[\frac{1}{\sqrt{1 - \frac{x}{x_0}} \left[1 - \left(\frac{1}{1 + \frac{y_0}{\delta_0}} \right) \right]} - 1 \right]$$

wherein

- δ_0 is the magnetically active air gap between the secondary part and the primary part, including a height of the permanent magnets,
- x_0 is the extent of the part of the end piece in the direction of movement of the linear motor having a non-constant air gap,
- y_0 is a height of the part of the end piece having a non-constant air gap at x_0 and,

$y(x)$ is the coordinate of the part of the end piece having a non-constant air gap at the point x .

10. (Amended) The linear synchronous motor of claim 8 10, wherein a pole gap is defined between neighboring poles of the secondary part at an angle which differs from 90° with respect the direction of movement of the linear motor.
11. (Amended) The linear synchronous motor of claim 8 10, wherein the pole gap has a varying gap width.
12. (Twice Amended) The linear synchronous motor of claim 8 10, wherein the end pieces include at least one partial stack of laminations, which is made of ferromagnetic material, said laminations directed essentially perpendicular to the direction of movement of the linear motor.
13. (Amended) The linear synchronous motor of claim 8 10, wherein the end pieces are configured for attachment onto the primary part.
14. (Amended) The linear synchronous motor as claimed in claim 2 3, characterized in that the end pieces (2) of the primary part (1) are constructed in the absence of slots and without carrying a winding.

15. (Amended) The linear synchronous motor of claim 8 10, wherein each said end pieces is constructed in the absence of a slot and without carrying a winding.

REMARKS

The last Office Action of October 10, 2002 has been carefully considered. Reconsideration of the instant application in view of the foregoing amendments and the following remarks is respectfully requested.

Claims 2, 4-8 and 10-15 are pending in the application. Claims 3-7, 9-15 have been amended. Claims 2 and 8 have been canceled. Enclosed is also a marked-up version of the changes made to the claims by the current amendment. The enclosed page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**".

Claims 2, 6-8 and 12-15 stand rejected under 35 U.S.C. §102(b) as being anticipated by Japanese reference 9-74733, of record.

Claims 4 and 10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese reference 9-74733 in view of Oishi, of record.

Claims 5 and 11 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Japanese reference 9-74733 in view of German reference 37 22 153, of record.

It is noted with appreciation that claims 3 and 9 are indicated allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims.

In view of the Examiner's grounds for rejection, applicants have replaced claim 2 by new independent claim 3, as suggested by the Examiner, who indicated that originally filed claim 3 would be allowable if rewritten in

independent form. In addition, applicants have replaced claim 8 by new independent claim 9, as suggested by the Examiner, who indicated that originally filed claim 9 would be allowable if rewritten in independent form. It is therefore applicants' belief that claims 3 and 9 have not been narrowed to trigger prosecution history estoppel. Claims 4-7 and 10-15 have been amended to make them dependent from claims 3 and 9, respectively.

In view of the above presented remarks and amendments, it is respectfully submitted that each of the presently pending claims in this application is believed to be in immediate conditions for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

Should the Examiner consider necessary or desirable any formal changes anywhere in the specification, claims and/or drawing, then it is respectfully requested that such changes be made by Examiner's Amendment, if the Examiner feels this would facilitate passage of the case to issuance. If the Examiner feels that it might be helpful in advancing this case by calling the undersigned, applicant would greatly appreciate such a telephone interview.

Respectfully submitted,

By: 

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